

PUBLIC HEALTH REPORT

Louis F. Saylor, M.D., M.P.H., Director, State Department of Public Health

Pesticides and Public Health

THE STATE DEPARTMENT of Public Health is co-operating with the University of California under legislative mandate to collect and collate pertinent scientific data on the effects of DDT and similar insecticides and pesticides. The department recently reported to the legislature on pesticide-related public health and environmental problems.

Considerable attention has been focused on the content of chlorinated hydrocarbons pesticides in human adipose tissues. DDT-derived materials are found in almost all samples of human adipose tissue analyzed. A limited number of observations show that DDT levels in the tissue of Alameda County residents approximate those of Chicago, Illinois, residents. Levels in Kern County are higher than those in Alameda County, even when agricultural workers are excluded from the comparison. Both in California and elsewhere Negroes have higher levels than Caucasians. A sex difference is often reported, with the male showing higher levels than the female in studies of Caucasians and Negroes in Alameda County and Chicago. Age has little effect on the levels. We do not know what significance these findings have in human illness.

Much concern has been aroused by the fact that levels of DDT-derived materials in the milk of many mothers exceed the tolerance set by the Federal Food and Drug Administration for cow's milk. Nationwide studies indicate that the level in human milk ranges from 0.05 to 0.37 parts per million (ppm), probably averaging about 0.1 to 0.2 ppm. FDA tolerance for DDT-derived materials in cow's milk has been established at 0.05 ppm. The average breast-fed child ingests daily about 0.02 mg DDT-derived materials per kilogram of body weight, twice the "acceptable daily intake" recommended by the World Health Organization. Again, what risk this constitutes to the nursing infant is unknown.

It has been estimated that about one-half of the body burden of DDT comes from home use of DDT. The other half is contributed by dietary, airborne and waterborne exposures to pesticides but in such

small quantities that they do not represent a serious threat to the general population of California.

Injuries and accidental poisonings constitute actual and potential hazards. Despite tight restrictions on purchase of pesticides for home use, some children are injured each year as a result of improper handling or careless storage of pesticides in the home, ranging from arsenic in past years to the chlorinated hydrocarbons more recently. A few accidents have occurred in California during transportation and storage of the highly toxic organophosphates. They involved highway spills and contamination of clothing and food. These are continuing dangers with a potential for injuring many persons at once. A grave threat potentially exists in improper disposal of used pesticide containers in unsupervised dumps and elsewhere. The State Department of Public Health is developing a comprehensive study of this problem and will recommend a pesticide container management system.

The population at greatest risk of pesticide poisoning consists of agricultural and occupational groups. Since 1950 the department has published annual statistical reports of occupational disease attributed to agricultural chemicals. In the past decade the number of reports received each year has not changed significantly, except for two outbreaks of parathion poisoning among agricultural workers in 1959 and 1963. Occupational illness may be under-reported, however, at least so far as organophosphate pesticides such as parathion are concerned. The department will test this hypothesis in a study based on laboratory evidence, involving levels of the enzyme cholinesterase, a highly reliable indicator of recent exposure to organophosphate pesticides.

The widespread effects of pesticides on the environment constitute another problem of great public concern. In addition to general contamination of the environment, pesticide pollution causes wildlife losses among fish and birds. DDT and other persistent pesticides also produce subtle effects through animal food chains, undergoing increasing concentration as they pass from lower to higher organism. The consequences of this food chain magnification are not completely understood, but

recent declines in populations of carnivorous birds have been attributed to accumulation of DDT and its metabolites in bird tissues and eggs. In addition, DDT may build up to levels higher than the 5 ppm tolerance set for edible fish and game. Four thousand cartons of tinned mackerel were withheld from the market for this reason.

Recently the California Director of Agriculture directed that DDT and the related pesticide DDD be eliminated from all present uses within two years. This is one of a long series of laws and regulations on pesticides developed by the California Department of Agriculture since 1927.

The elimination of DDT and DDD requires that an orderly and scientific procedure be followed to cause the least amount of disruption to agricultural production and the environment. In some instances, the substitution of less persistent but more toxic pesticides, such as the organophosphates, for DDT in insect control has upset the agro-ecosystem. Present substitutes for DDT have a broad spectrum of activity and a short residual effect. They kill beneficial predators and parasites and the pest species then return in greater numbers than before treatment because there are no natural controls. If DDT is used where possible for one more season,

a complete transition can probably be made to some of the other compounds without seriously disrupting crop production or the local agro-ecosystem. However, the greater toxicity of the organophosphates may cause an increase in the incidence of occupational and home pesticide morbidity.

Both the federal and the state legislatures passed significant pesticide legislation in 1969. California laws strengthen regulation and control of pesticide use and sale. They provide for the examination and licensing of dealers and give the Director of Agriculture added powers to register and cancel the registration of pesticides. In addition, recent legislation calls for the appointment of an advisory committee to the director to help him establish criteria and regulations for the prevention of damage to California's environment.

Pesticides play a vital role in eradicating disease-bearing vectors and in producing high grade food. The State Department of Public Health with other appropriate agencies will continue to conduct surveillance and epidemiological studies on the acute poisoning and long-term health hazards of pesticides, as well as their effects on environmental quality.

AMENORRHEA AND ORAL CONTRACEPTIVES

"As far as is known, no one can tell which patients who will have amenorrhea following oral contraceptive drugs, with one possible exception. It has been repeatedly shown that patients who have irregular menses or who have periods of stress amenorrhea are almost invariably made worse by oral contraceptives. It's our policy to first warn patients of this type that amenorrhea and infertility might occur for a period after cessation of oral contraceptives. If they still want the pills, then we feel that the sequential should be prescribed."

—ROBERT R. FRANKLIN, M.D., Houston
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